EX PARTE OR LATE FILED DOCKET FILE COPY ORIGINAL

WILEY, REIN & FIELDING

1776 K STREET, N.W.
WASHINGTON, D.C. 20006
(202) 429-7000

ORIGINAL

KATHERINE M. HOLDEN
(202) 429-7245

May 31, 1996

RECEIVED
MAY 31 1996

FACSIMILE
(202) 429-7049

William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Supplemental Reply Comments of the Personal Communications Industry Association in WT Docket 96-18 (Revision of Point 22 and Part 90 of the Commission's Rules to Facilitate Future Development of Paging Systems) -- PCIA Recommendations - Geographic Licensing of 929/931 MHz Paging Systems, MTA Border Interference Protection

Dear Mr. Caton:

In reply comments filed on April 2, 1996, with the Commission in the above-captioned docket, the Personal Communications Industry Association ("PCIA") represented it was working with industry members to develop a formula that would provide alternative means for reducing signal levels near the service area boundary to prevent interference while enabling a geographic licensee to provide service up to the market border. PCIA has now completed that effort, and enclosed are PCIA's recommendations, reflecting member consensus for defining interference protection on 929 and 931 MHz frequencies at the borders between MTAs (based on the Commission's proposal to define licensing areas using MTAs).

Should any questions arise concerning this submission, please contact either David Hilliard (202-429-7058) or me (202-429-7245).

Respectfully submitted,

Katherine M. Holden

Katherine M. Holden

cc: David Furth w/encl.

No. of Copies rec'd 024

PCIA Recommendations -
Geographic Licensing of 929/931 MHz Paging Systems
MTA Border Interference Protection

WT Docket No. 96-18; PP Docket No. 93-253

As the Commission recognized in its *NPRM*, efficient implementation of market-based geographic licensing will require a mechanism by which interference at MTA borders can be managed constructively. Accordingly, in its Comments PCIA volunteered to submit recommendations growing out of industry consultations aimed at developing an approach to border area interference. PCIA recommends that in the absence of negotiated provisions, the Commission limit the signal strength at MTA borders to no more than 33 dBuV/m for a 90% predicted field using a method based on the Okumura curves.[1] Licensees should be encouraged, however, to negotiate border sharing agreements with no specific overriding technical mandate. The 33 dBuV/m standard would apply in the absence of such agreements and in the absence of a grandfathered signal strength that is greater than 33 dBuV/m.[2]

The Choice of a Border Field Strength

Market area licensing will necessarily involve trade-offs as licensees configure systems in order to serve the public. For this reason, the Commission noted that a high degree of flexibility would be desirable and that licensees should be encouraged to negotiate and/or employ directional antennas so as to minimize the areas of mutual interference along borders. If too high a field strength were to be permitted at MTA borders, the potential for mutual interference would increase as systems placed interfering signals into neighboring MTAs. Selection of a signal strength that would be too low would create unserved areas by limiting the capability of licensees to avail themselves of the "front-to-back" signal suppression of directional antennas. Thus, with an extremely low border field strength, licensees would have to place their fringe area stations farther from the border. The result would be a decrease in the effective service within the MTA as licensees struggled to minimize the signal at the border.

---

[1] Y. Okumura, E. Ohmori, T. Kawano, K. Fukuda - "Field Strength and its Variability in VHF and UHF Land-Mobile Radio Service," Rev. of Electrical Communications Laboratory, Vol 16. , Sept.- Oct. 1968, pp 825-873.

A 33 dBuV/m signal strength gives 90 % predicted reliability according to Carey.

[2] Grandfathered licensees are those licensees who hold authorizations that were authorized prior to the adoption of geographic area licensing for paging carriers. As stated by PCIA in its Comments, grandfathered licensees should enjoy the same co-channel interference protection as they currently enjoy under the current paging rules.

After considering the minimal field strength needed to provide service and the desired-to-undesired ratio that describes interference, PCIA conferees recommend that the border field strength for non-grandfathered stations be limited to no more than 33 dBuV/m in the absence of a specific agreement to the contrary. Where unaffected by an interfering signal, 33 dBuV/m will provide a reasonable level of service to fringe areas. In the presence of an interfering signal, the area of interference will be tolerable, although the actual area will vary according to conditions.

The Field Strength Prediction Method

While PCIA generally favors the use of tables to simplify the determination of interference and service contours in the 929/931 MHz bands because of the simplicity and ease of application afforded by such a technique, border situations that involve the division of rights as between multiple licensees call for the use of a techniques capable of fine tuning and minimizing the area subject to interference. The Okumura method with terrain considerations stands out as one of the most reliable real-world radio wave propagation prediction methods. It can be applied by all engineers, lends itself to computerization, and should afford both the Commission and the industry a valuable tool for determining border area signal strength so as to minimize the amount of service to the public that is lost when adjoining licensees cannot otherwise agree among themselves as to the best method for managing their mutual interference. Accordingly, PCIA urges the Commission to adopt a standard of 33 dBuV/m predicted 90% field for the signals of non-grandfathered stations' signals at and beyond MTA borders. As applied, no non-grandfathered station would be allowed to place a signal greater than 33 dBuV/m at the border without having entered into an agreement with the adjoining licensee. Not only will this field strength be compatible with directional antennas, the prediction method will also allow engineers the flexibility to craft service areas using such traditional tools as height and power with confidence that urban, suburban, and rural conditions will be considered adequately in the prediction method.

The Okumura curves can be applied by using the Hata formula.[3] If a single method were to be selected, use of this formula would have the advantage of uniformity. It would not necessarily adequately characterize all situations because it does not take into account all of the correction factors inherent in the Okumura work. Accordingly, PCIA urges that applicants be permitted to use Hata, but that the Commission allow for other prediction methods based on the Okumura curves and correction factors to be employed in showing the location of the 33 dBuV/m contour. Such an approach might, for example, involve a computerized application of the Okumura curves that are relevant for the environment (*e.g.*, urban, suburban, or rural) and the

---

[3] M. Hata, "empirical Formula for Propagation Loss in Mobile Radio Services," IEEE Transactions on Vehicular Technology, vol. vt-29, 1980, pp. 317-325.

appropriate correction factors. Permitting this flexibility, but requiring that it be clearly supported by an accompanying explanation, would be consistent with the approach used by the Commission in defining cellular border areas in which applicants are permitted to use alternative methods within defined limits.[4] In this case, the refinements of Okumura could be applied, provided that they are justified.

In sum, applicants would not be permitted to place a predicted 90% field in excess of 33 dBuV/m at and beyond the border in the case of non-grandfathered stations. In order to provide better service to the public, applicants and licensees would, however, be encouraged to negotiate with neighboring MTA cochannel license holders to work out other arrangements as an alternative to the 33 dBuV/m limit.

---

[4]See Section 22.911(b) of the Commission's Rules. 47 C.F.R. §22.911(b) (1995).